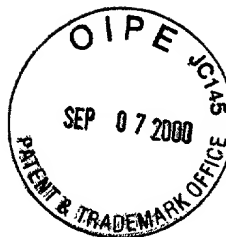


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Sir:

Transmitted herewith for filing is the patent application of

Inventor: Rodney Schulz

For: Improvements in Continuous Looping Feature in Transmission of HDTV Signals

Enclosed also are:

1. Power of Attorney and Declaration.
2. 7 sheets of informal drawings.
3. Small Entity Statement
4. Assignment

CLAIMS AS FILED

Total Claims $3 - 20 = \underline{\quad} \times \$9.00 =$

Independent Claims $3 - 3 = \underline{\quad} \times \$39.00 =$

TOTAL \$345.00

A check in the amount of \$385.00 is enclosed to cover filing fees and recording of assignment. If any additional charges or fees must be paid in connection with this communication, they may be paid out of our deposit account No. 06-0775.

The Commissioner is hereby authorized to charge payment of the following fees during the pendency of this application or credit any overpayment to Deposition Account 06-0775: Any patent application processing fees under 37 CFR 1.17 and any filing fees under 37 CFR 1.16 for presentation of extra claims.

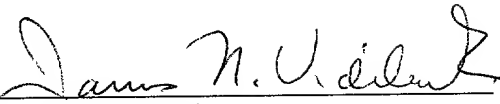
Please address all communications to James N. Videbeck, Patnaude & Videbeck, 1 S 376 Summit Avenue, Court C, Oakbrook Terrace, IL 60181 (630) 627-4552.

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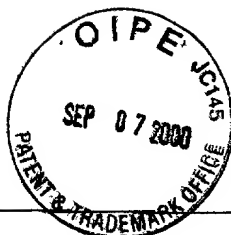
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Applicant or Patentee: Rodney Schulz

Serial or Patent No.: _____

Filed or Issued: _____

Attorney's

Docket No.: _____

Title: Improvements in Continuous Looping Feature in Transmission of HDTV signals

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) & 1.27(c))--SMALL BUSINESS CONCERN

I hereby declare that I am

☐ the owner of the small business concern identified below:☒ an official of the small business concern empowered to act on behalf of the concern identified below:NAME OF SMALL BUSINESS CONCERN Sencore, Inc.ADDRESS OF SMALL BUSINESS CONCERN 3200 Sencore Drive,Sioux Falls, SD

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled Impr. in Continuous Looping Feature in Transmission of HDTV signals by Rodney Schulz described in _____

☒ the specification filed herewith☐ application serial no. _____, filed _____☐ patent no. _____, issued _____

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e). *NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities (37 CFR 1.27)

NAME _____

ADDRESS _____

☐ INDIVIDUAL☐ SMALL BUSINESS CONCERN☐ NONPROFIT ORGANIZATION

NAME _____

ADDRESS _____

☐ INDIVIDUAL☐ SMALL BUSINESS CONCERN☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING A. L. BowdenTITLE OF PERSON IF OTHER THAN OWNER PresidentADDRESS OF PERSON SIGNING 3200 Sencore Drive, Sioux Falls, SDSIGNATURE A. L. BowdenDATE 9/6/2000



IMPROVEMENTS IN CONTINUOUS LOOPING FEATURE IN TRANSMISSION OF HDTV SIGNALS

5 This invention relates to apparatus and methods for receiving and storing and
sending HDTV (high definition television) signals and, more particularly, to an apparatus
and method for providing a continuous looping play feature while transmitting those
signals to display televisions in retail store outlets. This application is a continuation-in-
part of provisional applications Ser. No. 60/152,738 filed September 8, 1999 and Ser. No.
10 60/152,737 filed September 8, 1999.

Background of the Invention

 The change from analog electronic circuitry to digital electronic circuitry in the
consumer electronics industry has brought about wide spread change in the products
utilized by consumers. Examples of this change can be seen in personal computer and
15 digital telephone circuitry. In the personal computer field, data storage apparatus in the
form of hard disk drives and DVD (digital versatile disks) drives have allowed consumers
to store massive amounts of digital data and have the ability to send that data to various
display apparatus. The use of digital electronic technology has also enabled the advent of
high definition television (HDTV) which will provide televisions with better picture
20 quality, better viewing aspect ratio, and larger viewing screens.

 After years of development, high definition television (HDTV) sets are now being
sold. These new sets receive digital signals and produce a much sharper, static free
picture. However, the new technology also comes with a much higher price tag. HDTV
sets currently are sold in a price range from about \$4,000 to \$10,000 each. In order to

sell these HDTV sets, it is imperative for the television dealers to show to the purchasing public the dramatic improvement in picture quality over standard analog sets.

The best means of operational display of the new HDTV sets would be to simply receive a digital TV broadcast from a local television station. Unfortunately, at the present time, there are only a handful of stations broadcasting digital TV to the nation's largest markets. Even these broadcasts are mostly limited to prime time viewing hours or special events. This method is simply not yet available to most of the nation most of the time.

Another way to display the new HDTV sets in operation is with a satellite feed. This technology can be very expensive, and is still not the best means to demonstrate the new sets because the content of the satellite broadcast may not be the best material for showing the sharper images produced by the new sets. Interference from weather and atmospheric conditions can also be a problem. The retailer also has to accept whatever signal is being sent by the satellite and the retailer does not have the ability to show material especially developed to demonstrate the features of HDTV.

The best solution for the retailer is to have a "box" in the store with pre-recorded high definition content that the sales person can play to customers to demonstrate their sets. One means of pre-recording material involves recording the HD material on a tape for the retailer to play back on a digital VCR. Because of the extremely large amount of information that needs to be stored and played back at a very high rate of speed, these tape decks and their tapes are far more complex and expensive than a standard analog VCR. But the biggest disadvantage with using a tape is the downtime required to rewind the tape when it reaches the end. Also, the HDTV player could not be left unattended to

catch the eye of the passerby. The tape would simply reach the end and stop playing unless someone was there to rewind or change the tape. Besides being an inconvenience and a burden, it has resulting downtime and ineffectiveness built into it.

A need has arisen to provide an inexpensive means of providing a continuous looping feature useful while demonstrating HDTVs, at least until television broadcast stations are continually running HDTV broadcast signals.

It is an objective of the present invention, generally stated, to provide a continuous looping play feature in an HDTV player for sending HDTV format signals in a closed circuit to HDTVs.

More particularly, it is a further objective of the present invention to provide a continuous looping play feature with an HDTV player utilizing a hard disc drive, or a DVD drive, for storing and retrieving video data and converting it to 8-VSB format for use in a closed circuit to demonstrate and/or service HDTVs.

Summary of the Invention

The invention resides in a continuous looping play feature in a high definition TV player capable of utilizing at least one of a hard disk drive and a DVD drive as the media for storing the audio and video content of HDTV programming. In order to utilize the hard disk drive or the DVD drive for continuous looping of selected portions of the storage media, video data must be storable therein, and retrieved by the player which converts it to the 8-VSB modulation format used to provide signals to HDTVs. The signals are converted in two megabyte segments. The segments are numbered and the looping feature when reaching the end numbered segment moves to the start numbered segment.

Brief Description of the Drawings

The features of the present invention which are believed to be novel are set forth with particularity in the appended claims. The invention, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawings wherein like reference numerals identify like elements throughout and in which:

Fig. 1 is a diagrammatic view of the continuous looping display HDTV player of the present invention shown sending an HDTV compatible signal through a closed circuit to televisions on display in a retail store;

Fig. 2 is a block diagram of a first embodiment of the present invention;

Fig. 3 is a block diagram of a second embodiment of the present invention;

Fig. 4 is a diagrammatic view and shows how a singular video clip can be played continuously over and over;

Fig. 5 is a diagrammatic view and shows how a sequence of video clips can be set up to loop (play) continuously;

Fig. 6 is a front elevational view of the HDTV995 HDTV player featuring basic continuous play looping;

Fig. 7 is a front elevational view of the HDTV996 VSB player having increased flexibility in selecting the amount and sequence of material to continuously loop through;

Fig. 8 is a front detail elevational view of a first readout display shown in Fig. 7;

Fig. 9 is a front detail elevational view of a second readout display shown in Fig.

7.

Detailed Description of the Preferred Embodiment

Referring to Fig. 1, a diagrammatic view of a retail appliance store is shown generally at 10, and it includes a plurality of television sets 11-11 which may be viewed by customers 12 and demonstrated by a salesman 13. In this embodiment, each of the televisions 11 is sent a signal in a closed circuit 14 from the HDTV player including a continuous looping play feature, generally indicated at 15, shown in block diagram, and identified as a television station in a box. The HDTV player 15 includes apparatus for storing program material 16. Apparatus 16 may be a hard disk drive, a DVD drive or the like. Data containing the audio and digital signal is placed in this medium. This is the stored program material. This data is retrieved from the storage medium 16 and modulated to a base band signal by the modulator 17. The radio frequency up-converter 18 converts this base-band signal to an RF (radio frequency) signal. Finally, the RF signal is amplified and sent to the output by the output amplifier 19. This RF signal is then connected to an HDTV 11-11 where it is demodulated, decoded, and displayed.

Referring to Fig. 2, a more detailed block diagram of the data storage and transmitting operation with a continuous looping play feature of the first embodiment is generally indicated at 21. In this embodiment, this device may be called an HDTV player 21. The audio and video information is stored on the hard drive 22, which may be either a hard disk drive as utilized in present personal computers, or a digital versatile disk drive, which may also be used in computers or to show movies on a present generation television. This information is retrieved from the hard drive 22 by CPU 23 (central processing unit) and stored in two 2-megabyte blocks on the system memory 24. The CPU numbers identify each of the 2-megabyte blocks it stores on the system memory. The CPU also includes software that stores the identification of the start and finish blocks

and moves to lay the start block as soon as the finish block has been displayed. The bus master controller 25 controls the flow of data from the system memory 24, through the bus master 26 to the FIFOs (first-in, first-out registers) 27. The bus master 26, under control of the bus master controller 25, copies 1K byte blocks from one of the 2-megabyte blocks in the system memory 24 into the FIFOs 27. After the block of data is copied to the FIFOs 27, the bus master 26 reads data from the other 2-megabyte block in the system memory 24. While the bus master 26 reads from the second block of system memory 24, the CPU 23 reads more data from the hard disk drive 22 and fills the first block of data in system memory 24 and identifies that individual block.

After reading from one block of data in system memory 24 while the other is being filled, a constant flow of data is maintained into the FIFOs 27. This provides the 8-VSB modulator 28 of a constant flow of data from the FIFOs 27. The 8-VSB modulator 28 encodes the data, and then converts the incoming data into one of eight voltage levels. This is the base band signal that is used to modulate the radio frequency carrier. This signal can be connected directly to a high definition television 11. The HDTV demodulates and converts the 8-VSB signal into audio and video. The continuous looping feature in the CPU stops play after displaying, identifying finish block of data, and almost instantaneously starts play at the identified start block on the medium of data storage.

Referring to Fig. 3, a second embodiment of the television station in a box, including continuous looping play feature, is generally indicated at 31. Compressed video and audio information in this embodiment is stored on a hard drive 32, which similarly to the hard drive 22 of the first embodiment may be a hard disk drive or a digital versatile

disk. Compressed digital video and audio information is stored on the hard drive 32 in either the MPEG-2 compressed format or in a pre-encoded format. The pre-encoded format includes proprietary pre-processing of the MPEG data to ease the requirements of the 8-VSB modulator (not shown) and provides a level of copy protection to the system.

5 One of the main requirements of the data transfer is to re-clock the output data at a fixed rate required by the parallel interface and the modulation standard. Data retrieved from the hard drive 32 is not presented at a fixed rate. The transfer of data from the hard drive 32 to the memory 33 is controlled by the computer's microprocessor 34 and is continually interrupted as the microprocessor 34 services other tasks and subroutines.

10 Therefore, a buffer that allows data to be written at one rate and read at another is needed. This is accomplished with FIFO memory, generally indicated at 35-38, which has two separate ports for the input (written) data and the output (read) data. There is a separate clock for each data port.

 The entire reclocking process is handled in two steps. The first step occurs when

15 the microprocessor 34 moves the data into two concurrent 2Meg blocks of system memory 33. In accordance with the invention, the microprocessor distinctly identifies or numbers each 2Meg block of memory. It initially fills both sections and then waits until one block is emptied by the reading process. As the read pointer transitions into the second block of system memory 33, the microprocessor 34 is notified to refill the first

20 block. The refill cycle of the first block can be completed faster than the second block is emptied. This cycle of refilling the empty blocks continues until the system is stopped by the control circuitry. The next step is performed by four 512-byte blocks of FIFO memory 35-38. The second stage adds another level of buffering to the system memory

33 and provides another important step. Data in the hard drive 32 and system memory 33 are stored and manipulated in 32 bit wide words. The output of this system must be 8 bits wide. The 32 bit words from the system memory 33 are distributed across the four 8 bit FIFO's 35-38 by a bus master device 40 via the PCI bus 41. In the same manner as the system memory 33, the bus master 40 and separate control logic microprocessor 42 break each FIFO 35-38 into two sections. The sections are refilled as the read pointer transitions across the half full boundary of each device. The output is then taken sequentially from each of the 8 bit FIFOs 35-38 at the required rate and width.

The control logic maintains a constant flow of data to the output at one of two rates:

19.392658 megabits per second or 2.424082 megabytes per second.

21.524475 megabits per second or 2.690559 megabytes per second.

The 19.392658 megabits per second rate is the bit rate for the MPEG transport stream. This is the output data when the raw MPEG data is stored on the hard drive 32. The 21.524475 megabits per second rate is the bit rate required when the MPEG data is pre-encoded. This rate takes into account the data overhead required to store the Reed-Solomon error correction data and the additional field syncs.

The CPU 34 includes instructions regarding identifying a start block and a finish block in any single sequence or multiple sequences of memory representing the HDTV program a user wants to display on screens in the show room. Upon choosing the start and stop positions (2Meg blocks), when the HDTV player reaches the finish block it will automatically, almost instantaneously return to the designated start block and continue playing.

Two different input and output standards are supported by this system, including TTL and LVDS. Input and output buffers are also included to convert the data ports. One additional buffer is used to transfer the data to another system board that develops the 8VSB-modulated signal.

5 This transfer method provides a cost effective means of retrieving video data that has been stored on a consumer type hard drive and produces a fixed rate data interface for the MPEG transport system.

Applicant's present continuous looping play invention, as shown in both embodiments, provides a new and improved means for uninterrupted continuous play of
10 working HDTV's 11 when there is, as yet, no television broadcast stations in the nation that are continually running with HDTV broadcast signals. The present invention provides an inexpensive means of continuously demonstrating high definition TVs. It may be loaded with HDTV program material or user created program material for the purpose of showing the capabilities of the HDTV technology. It is essentially a
15 television broadcast station in a box 15. It will provide all that a television station would provide if it were available. In fact, it is a much more flexible means of demonstrating HDTV. It can be completely controlled by a salesperson 13 allowing him or her to change the program material for the customer 12. This is something one could not do with a broadcast HDTV signal.

20 Referring to Figs. 6-9, the front panels of the HDTV 995 and HDTV 996 are shown generally at 45 and 46, respectively. HDTV 995, 45, is the model described in the first embodiment described above, and HDTV 996, 46, is described in the second embodiment above. HDTV 995, front panel 45 includes a display panel 47 and play 48,

pause 49, stop 50, program select 51 and up and down scroll buttons, 52 and 43,
respectively.

Referring to Figs. 8 and 9, when the program select button 51 is pushed, the
display panel shows all of the programs stored in the unit. Displaying the program name
5 and the length of play. The up and down scroll buttons 53, 52, respectively, scroll the
programs on the display panel.

When the program to be played is aligned with the arrow 54, the play button may
be pushed. The display 49 will change to a display similar to that shown in Fig. 9. The
continuous looping feature of the present invention provides for continuous replaying of
10 the designated program until the stop button is pushed.

Referring to Fig. 7, the front panel 46 for the HDTV 996 is shown, and includes a
display panel 60, and play button 61, stop button 62, record button 63, erase button 64,
play list recall button 65, enter button 66, and directional buttons up 67, left 68, down 69,
and right 70. To the right of the display is a set of 12 telephone pattern buttons 72. The
15 operation of the HDTV 996, 46 is conducted as follows:

Selecting a Program or Group of Programs

The HDTV 996 offers 4 modes of playback, "play all," "play sequence," "play
loop" and a single program play. Each mode allows flexibility in selecting the programs
to be played. When the HDTV 996 is playing a program or group of programs both the
20 8-VSB and both parallel outputs (TTL and LVDS) are active. Depending on the switch
setting, the 8-VSB output will be channel 14 or 15.

V-1 Play All

“Play all” will play all the programs loaded on the unit in an alphabetic order sequence and loop back to the first program when all the programs are done playing. The number next to the “play all” display represents the total play time of the programs loaded on the unit. To “play all” use the up and down arrow to select “play all” and press the play button 61. Note, when the “play all” is in use an * is displayed next to “play” on the VDF screen. When all the programs are complete, the unit loops back to the first program and starts the sequence again.

V-2 Play Seq.

“Play Seq.” creates and plays a sequence of programs on the HDTV 996. To create a sequence, use the up and down arrow to select “play seq” and press enter 66. An * will appear next to the “play seq” indicating that the play sequence function is selected. To select a program, use the up and down arrow to select (by pressing enter) for each program in the sequence. The programs will be played in the order in which they were selected. When a program is selected for the sequence play, a number indicating its position in the sequence is displayed next to the program. To de-select the program press on enter 66 again in front of the program that you want to remove from the sequence. The number next to the “play seq” display represents the total time of the programs selected in the sequence. Note, the maximum number of programs in the “play seq” mode is 9 programs unless activated from the optional remote control software. To “play seq” use the up and down arrow to select “play seq” and press play 61. When all the programs in the sequence are done playing, the unit loops back to the first program and repeats the sequence.

V-3 Play Loop

“Play loop” plays a predefined portion of a program. To create a loop, use the up and down arrow to select “play loop” and press enter 66. An * will appear next to the “play loop” indicating that the play loop function is selected. Use the up and down arrows to select the program that you want to loop on and press enter 66. Use the right arrow to move the cursor and press enter 66 when the desired start point is reached. Use the right arrow to move the cursor and press enter 66 when the desired end point is reached. The “play loop “ sequence will then start playing. Each increment of the cursor represents 1 percent of the total play time of the program. When the loop is done playing, the unit loops back to the start point of the loop and starts the “play loop” again.

10 Note, when the play list button 65 is pressed, the loop start and stop points are erased.

V-4 Play Single Program

To play a single program, use the up and down arrow to select the program to play and press enter 66 or play 61. When the program is done playing, the unit loops back to the beginning of the selected program and starts again.

15 With the HDTV players of the present invention, retailers have an inexpensive means of demonstrating HDTV with program material specifically selected to show the superior quality of the new sets. HDTV players 996 and 995 give the user in-store control of the material being played at any given time for unmatched flexibility and selectability. The looping feature in the HDTV players allow them to play continuously,

20 so they can be left unattended to show the HDTV sets without the need to stop and rewind tapes. They also provide uninterrupted demonstrations, with no time-consuming rewinds or tape changes that could break the continuity of a sales presentation and ultimately plague its effectiveness.

While two embodiments of the present invention have been shown and described, it will be apparent to those skilled in the art that many changes and modifications may be made without departing from the true spirit and scope of the present invention. It is the intent of the appended claims to cover all such changes and modifications which fall

5 within the true spirit and scope of the invention.

What is claimed:

1. A method of continuous looping of an HDTV signal program on an HDTV player comprising the steps of:
 - dividing an HDTV signal program into a plurality of substantially equal size blocks of data,
 - placing block identifying data on each block sequentially,
 - identifying a first block as an initiating block in a looping program,
 - identifying a second block displayed later in said program than said first block as a finishing block in a looping program,
 - playing said program from said first block of data through said second block of data,
 - instructing said playing of said program that said first block is to be displayed substantially immediately after said second block of data is played.
2. A method of storing and continuous looping transmission of digital HDTV signals comprising the steps of:
 - copying a first block of digital HDTV signals from 1 of 2 distinct blocks in a computer system memory to first in, first out registers,
 - identifying said first block of digital HDTV signals,
 - copying a second block of digital HDTV signals from the other of said two distinct blocks in a computer system memory to be the first in, first out registers,
 - identifying each of said distinct blocks of additional digital HDTV signals,

providing said constant flow of digital HDTV signals from said first in, first out registers to an 8-VSB modulator,

encoding said digital HDTV signals,

converting said digital HDTV signals into one of 8 voltage levels for providing a base band signal that is used to modulate a radio frequency carrier,

choosing one of said blocks of digital HDTV signals to be a start block and another one of said blocks of digital HDTV signals to be a finish block in a program to be transmitted,

playing said blocks of digital HDTV signals from said start block to said finish block,

continuously playing said blocks of digital HDTV signals in identified order with said start block positioned after said finish block in playing order.

3. A method of re-clocking digital HDTV signals and preparing same for continuous looping play comprising:

filling two concurrent blocks of computer system memory with 32 bit wide digital HDTV signals and identifying the signals making up each distinct block thereof,

emptying one of said two concurrent blocks by a reading process,

emptying a second of said two concurrent blocks by a reading process while a microprocessor orders the refill of said first block at a faster rate than the emptying of said second block,

distributing said 32 bit wide digital HDTV signal across four 8 bit first in, first out registers by a bus master device via a bus,

dividing each first in, first out registers into two sections,
refilling each section as each register transitions a half full boundary, and
providing a constant predetermined rate and width digital HDTV signal
sequentially in identifiable pre-determined sized blocks of such signals from each of the
four 8-bit first in, first out registers.

Abstract of the Disclosure

A high definition television player records and plays back HDTV signals in a closed circuit to demonstrate high definition television. The signals are recorded on a hard drive, CD, DVD or the like in discrete 2-meg data blocks, with each block of data being separately identified. The invention provides for continuous looping play of a desired program or programs by identifying the starting data block and ending data block of the program. The program play is begun at the starting block. When the program is finished at the end block, play continues at the start block, and so on until the stop button is pushed.

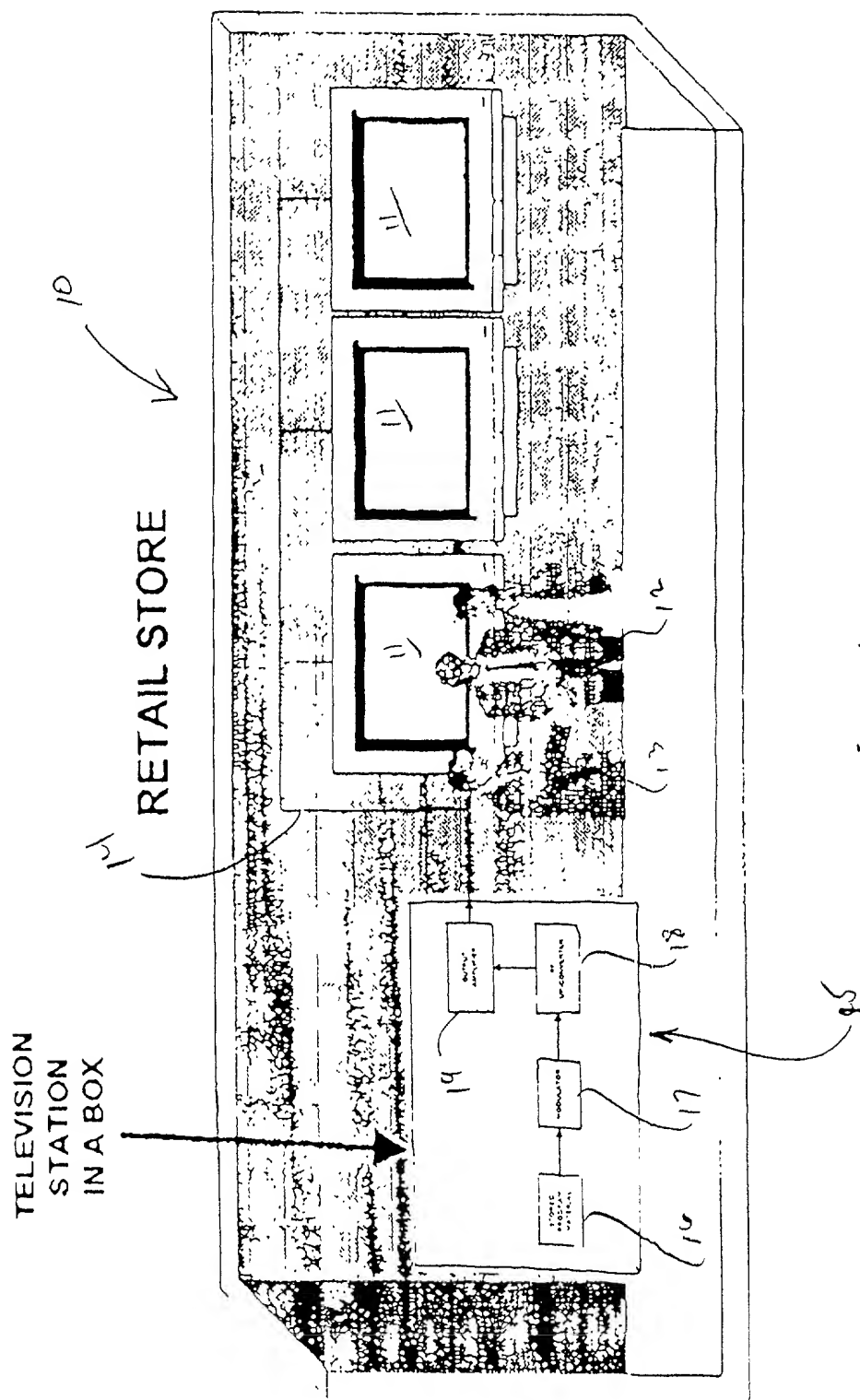


Fig 1

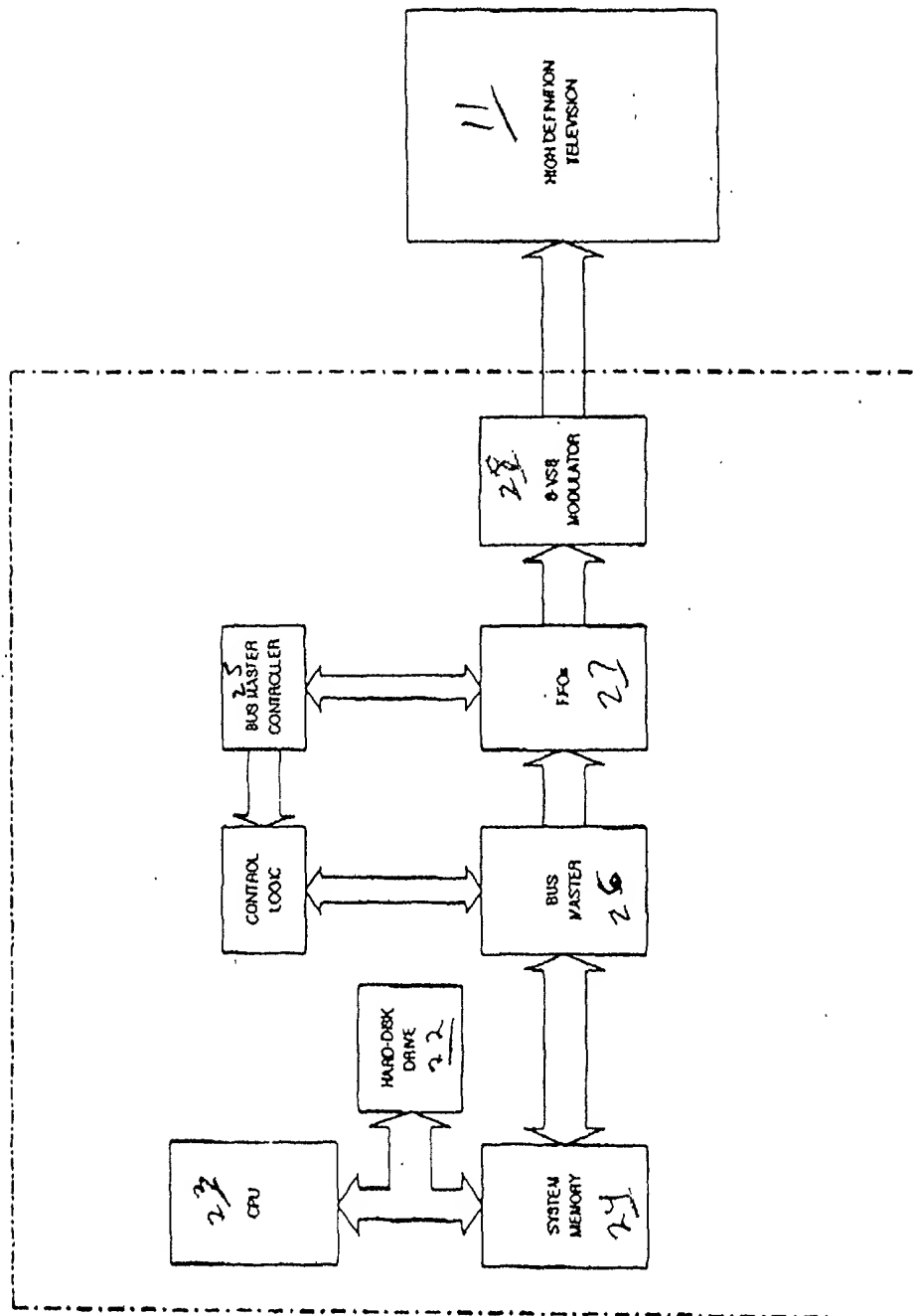


Fig 2

Parameter	Estimate	Standard Error	t-Statistic	p-Value
Intercept	0.0000	0.0000	0.0000	0.0000
Age	0.0000	0.0000	0.0000	0.0000
Age ²	0.0000	0.0000	0.0000	0.0000
Age ³	0.0000	0.0000	0.0000	0.0000
Age ⁴	0.0000	0.0000	0.0000	0.0000
Age ⁵	0.0000	0.0000	0.0000	0.0000
Age ⁶	0.0000	0.0000	0.0000	0.0000
Age ⁷	0.0000	0.0000	0.0000	0.0000
Age ⁸	0.0000	0.0000	0.0000	0.0000
Age ⁹	0.0000	0.0000	0.0000	0.0000
Age ¹⁰	0.0000	0.0000	0.0000	0.0000
Age ¹¹	0.0000	0.0000	0.0000	0.0000
Age ¹²	0.0000	0.0000	0.0000	0.0000
Age ¹³	0.0000	0.0000	0.0000	0.0000
Age ¹⁴	0.0000	0.0000	0.0000	0.0000
Age ¹⁵	0.0000	0.0000	0.0000	0.0000
Age ¹⁶	0.0000	0.0000	0.0000	0.0000
Age ¹⁷	0.0000	0.0000	0.0000	0.0000
Age ¹⁸	0.0000	0.0000	0.0000	0.0000
Age ¹⁹	0.0000	0.0000	0.0000	0.0000
Age ²⁰	0.0000	0.0000	0.0000	0.0000
Age ²¹	0.0000	0.0000	0.0000	0.0000
Age ²²	0.0000	0.0000	0.0000	0.0000
Age ²³	0.0000	0.0000	0.0000	0.0000
Age ²⁴	0.0000	0.0000	0.0000	0.0000
Age ²⁵	0.0000	0.0000	0.0000	0.0000
Age ²⁶	0.0000	0.0000	0.0000	0.0000
Age ²⁷	0.0000	0.0000	0.0000	0.0000
Age ²⁸	0.0000	0.0000	0.0000	0.0000
Age ²⁹	0.0000	0.0000	0.0000	0.0000
Age ³⁰	0.0000	0.0000	0.0000	0.0000
Age ³¹	0.0000	0.0000	0.0000	0.0000
Age ³²	0.0000	0.0000	0.0000	0.0000
Age ³³	0.0000	0.0000	0.0000	0.0000
Age ³⁴	0.0000	0.0000	0.0000	0.0000
Age ³⁵	0.0000	0.0000	0.0000	0.0000
Age ³⁶	0.0000	0.0000	0.0000	0.0000
Age ³⁷	0.0000	0.0000	0.0000	0.0000
Age ³⁸	0.0000	0.0000	0.0000	0.0000
Age ³⁹	0.0000	0.0000	0.0000	0.0000
Age ⁴⁰	0.0000	0.0000	0.0000	0.0000
Age ⁴¹	0.0000	0.0000	0.0000	0.0000
Age ⁴²	0.0000	0.0000	0.0000	0.0000
Age ⁴³	0.0000	0.0000	0.0000	0.0000
Age ⁴⁴	0.0000	0.0000	0.0000	0.0000
Age ⁴⁵	0.0000	0.0000	0.0000	0.0000
Age ⁴⁶	0.0000	0.0000	0.0000	0.0000
Age ⁴⁷	0.0000	0.0000	0.0000	0.0000
Age ⁴⁸	0.0000	0.0000	0.0000	0.0000
Age ⁴⁹	0.0000	0.0000	0.0000	0.0000
Age ⁵⁰	0.0000	0.0000	0.0000	0.0000
Age ⁵¹	0.0000	0.0000	0.0000	0.0000
Age ⁵²	0.0000	0.0000	0.0000	0.0000
Age ⁵³	0.0000	0.0000	0.0000	0.0000
Age ⁵⁴	0.0000	0.0000	0.0000	0.0000
Age ⁵⁵	0.0000	0.0000	0.0000	0.0000
Age ⁵⁶	0.0000	0.0000	0.0000	0.0000
Age ⁵⁷	0.0000	0.0000	0.0000	0.0000
Age ⁵⁸	0.0000	0.0000	0.0000	

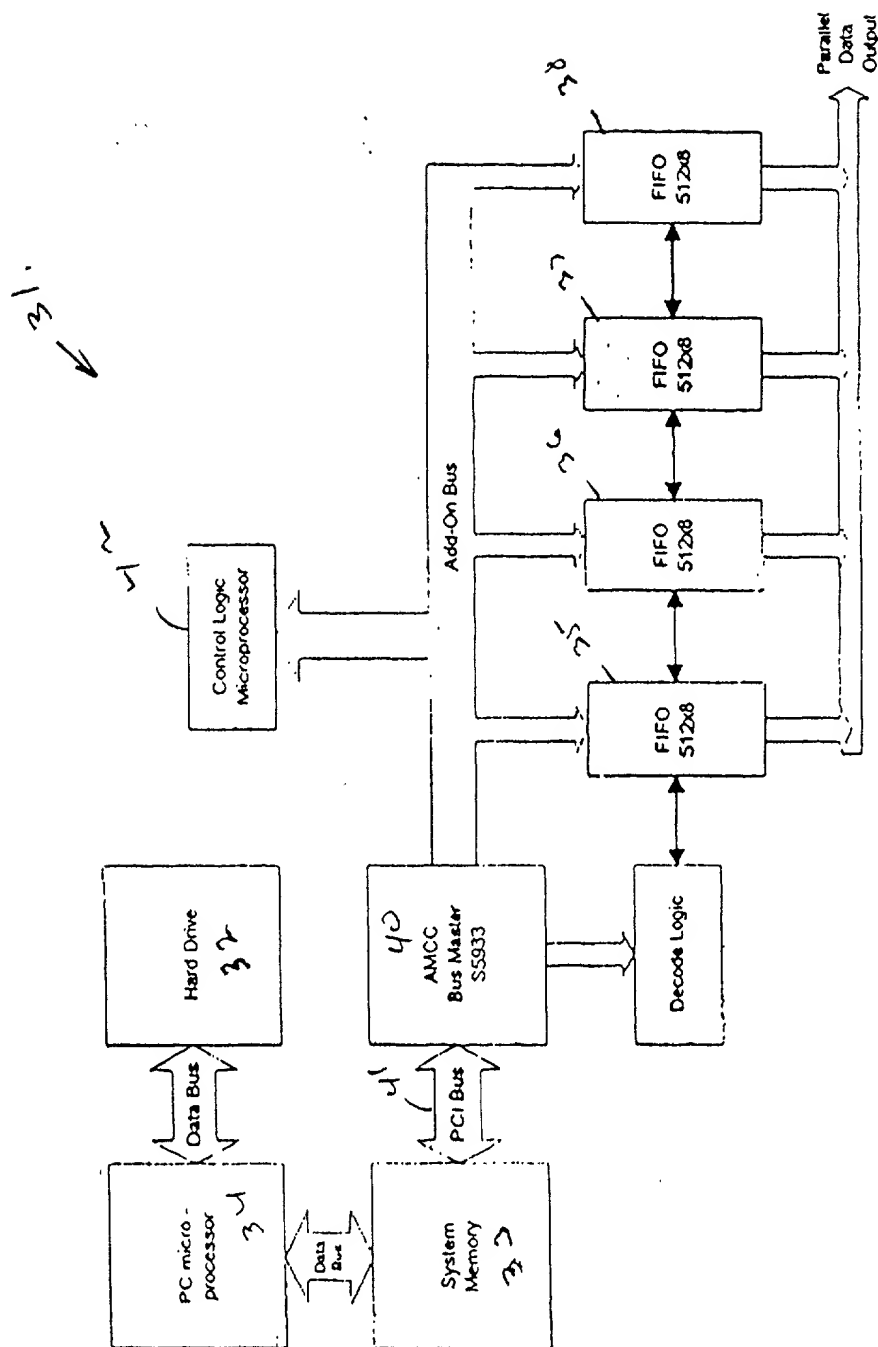


Fig 3

Single Program Loop

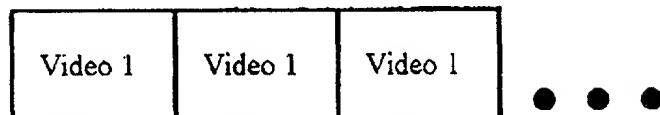


Figure 4

Play All or Play Sequence Loop

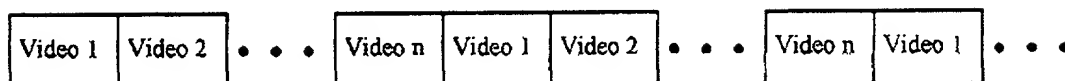


Figure 5

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002060-0E045960

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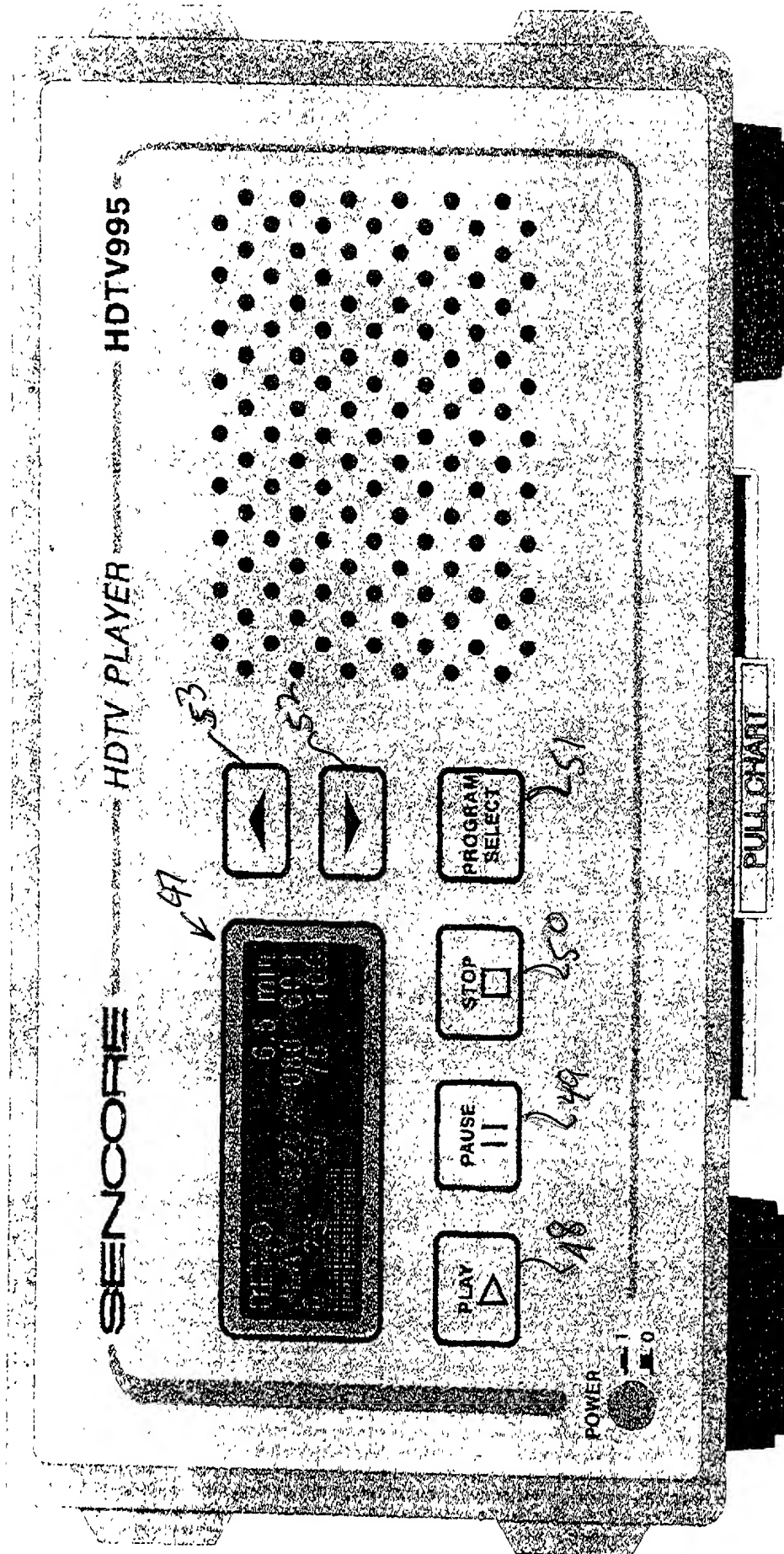
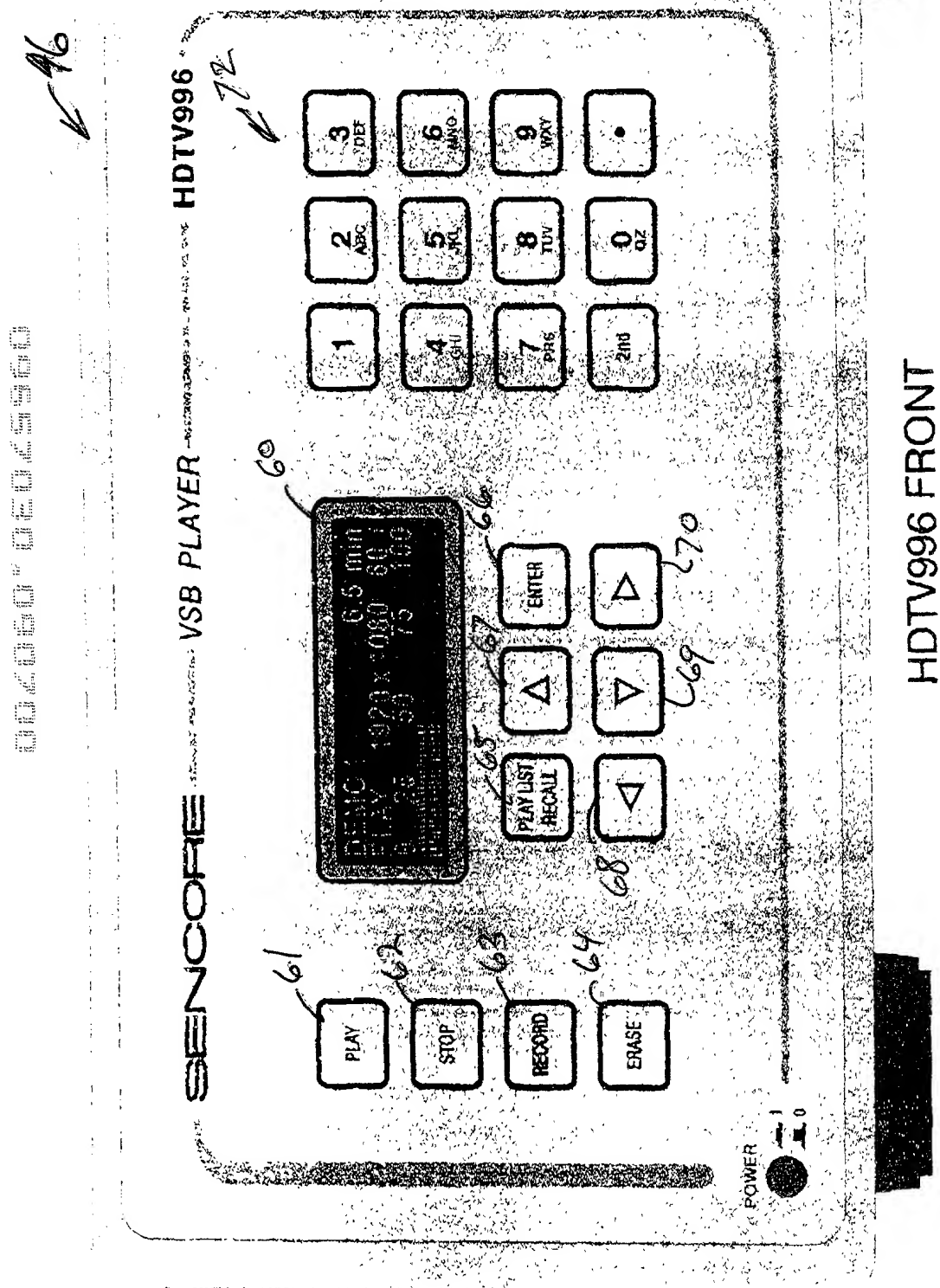


Figure 6



Unit Operation:

It will be helpful to refer to Figure 3 while reading this.

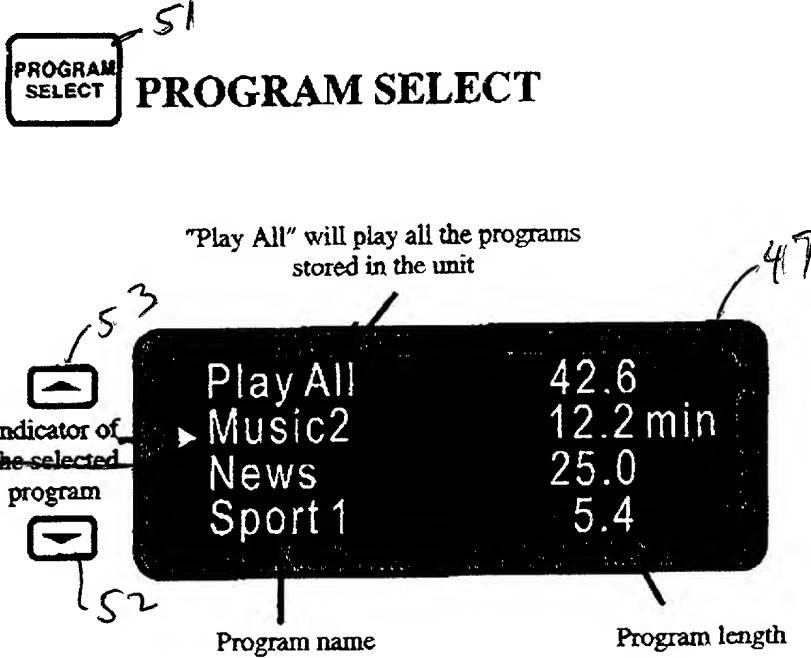


FIG 8

Unit Operation:

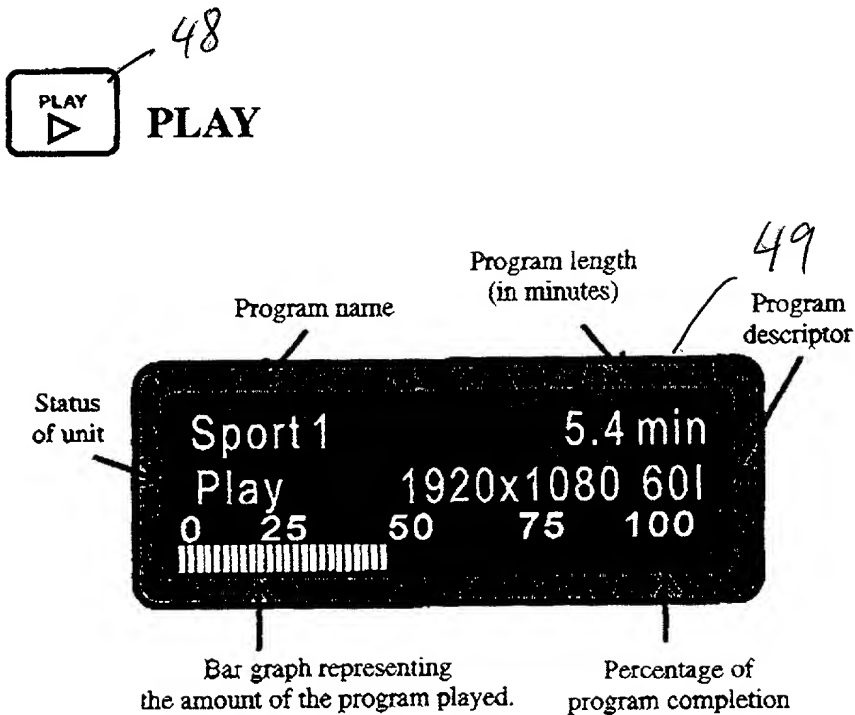


FIG 9

004060-0604560



DECLARATION AND POWER OF ATTORNEY

As below named inventor, I declare that: my residence, post office address and citizenship is as stated below next to my name; that I believe I am the original, first and joint inventor of the invention entitled: Improvements in Continuous Looping Feature in Transmission of HDTV Signals which is described and claimed in the attached specification. I hereby state that I have reviewed and understand the contents of the specification, including the claims, and that I do not know and do not believe that the same was ever known or used in the United States of America before my invention thereof or patented or described in any printed publication in any country before my invention thereof, or more than one year prior to this application, that said invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by my or my legal representatives or assigns more than six months prior to this application, that I acknowledge our duty to disclose information of which I are aware which is material to the examination of this application, and that no application for patent or inventor's certificate on this invention has been filed by me or my legal representatives or assigns in any country foreign to the United States of America.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information

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and belief are believed to be true; and further that these statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such wilful false statements may jeopardize the validity of the application or any patent issuing thereon.

I hereby appoint as my attorney James N. Videbeck, Reg. No. 27,241 with full power of substitution and revocation, to prosecute this application and to transact all business in the United States Patent and Trademark Office connected therewith. The Patent Office is requested to direct all mail to the said James N. Videbeck at Terrace Executive Center, Court C, 1 S 376 Summit Avenue, Oak Brook Terrace, Illinois 60181, (630) 627-4552.

Rodney Schulz

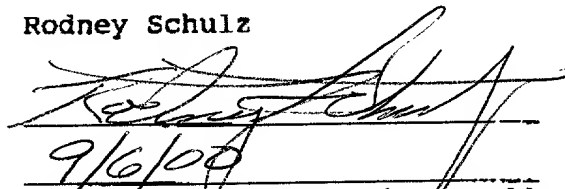
Signature

Date

Residence

Citizenship

Post Office Address


9/6/00

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